IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application: Ian Charles OGILVY   ]
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Serial No: 09/381,143   ]   GRP ART UNIT: 2158
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Filed: October 22, 1999   ]   Ex.: P.H. Nguyen
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For: METHOD AND APPARATUS OF   ]
              CONTROLLING   ]
              COMMUNICATIONS   ]

CLAIMS - MARKED-UP VERSION
(IN THE REVISED FORMAT)

1.   (Currently amended) A communications device which is arranged to process messages for communications, comprising a virtual machine means which includes a virtual function processor and function processor instructions for controlling operation of the device, and a virtual message processor which is arranged to be called by the function processor and which is arranged to carry out the task of assembling, disassembling and comparing messages, whereby when a message is required to be handled by the communications device the message processor is called to carry out the message handling task, wherein the virtual machine means is emulatable in different computers having incompatible hardwares or operating systems.

2.   (original) A device in accordance with claim 1, further comprising

        a virtual protocol processor arranged to organize communications to and from the device, and

        protocol processor instruction means arranged to provide directions for operation of the protocol processor means.

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3.	(previously amended) A device in accordance with claim 1, wherein the device includes a microprocessor which runs in accordance with native software code, and the message processor is implemented as the native software code of the microprocessor.

4.	(original) A device in accordance with claim 2, wherein the device includes a microprocessor which runs in accordance with native software code and the protocol processor is implemented as a native software code of the microprocessor.

5.	(Previously amended) A device in accordance with claim 3, wherein the function processor is implemented as native code of the microprocessor.

6.	(Previously amended) A device in accordance with claim 1, wherein the message instruction means includes a set of descriptions of message data.

7.	(Previously amended) A device in accordance with claim 1, wherein the message processor instruction means is implemented in software defined by the message processor, wherein the device includes a microprocessor, and wherein the message instruction means do not require translation to the native software code of the microprocessor.

8.	(Previously amended) A device in accordance with claim 2, wherein the device includes a microprocessor which runs in accordance with native software code and wherein the protocol instruction means are implemented in software defined by the protocol processor means, and do not require translation to the native code of the microprocessor.

9.	(Previously amended) A device in accordance with claim 1, wherein the device

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includes a microprocessor which runs in accordance with native software code, and wherein the function processor instruction means are implemented in software defined by the function processor means and do not require translation to the native code of the microprocessor.

10.   (Previously amended) A device in accordance with claim 1, including a hardware abstraction layer comprising a series of routines which provide an application program interface to exercise an operating system, BIOS or hardware drivers of the device.

11.   (Previously amended) A device in accordance with claim 1, wherein the device is a specialized network access device arranged for communicating over a network.

12.   (Previously amended) A device in accordance with claim 11, the device being a remote payment terminal and the messages being messages relating to remote payment transactions.

13-15. (Canceled)

16.   (Currently amended) A method of programming a device for processing communications, comprising the steps of loading a processing means of the device with a virtual machine which includes a virtual function processor and function processor instructions for controlling operation of the device, and a virtual message processor which is arranged to be called by the function processor and which is arranged to carry out the task of assembling, disassembling and comparing messages, whereby when a message is required to be handled by the communications device the message processor is called to carry out the message handling task, wherein the virtual machine means is emulatable in different

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computers having incompatible hardwares or operating systems.

17. (Original) A method in accordance with claim 16, comprising the further step of loading the processor means of the device with a virtual protocol processor arranged to ~~organise~~ organize communications to and from the device, and protocol processor instructions arranged to provide directions for operation of the protocol processor.

18. (Currently amended) A computer memory storing instructions for controlling a computing device to implement a virtual machine means which includes a virtual function processor and function processor instructions for controlling operation of the device, and a virtual message processor which is arranged to be called by the function processor and which is arranged to carry out the task of assembling, disassembling and comparing messages, whereby when a message is required to be handled by the communications device the message processor is called to carry out the message handling task, wherein the virtual machine means is emulatable in different computers having incompatible hardwares or operating systems.

19. (Original) A computer readable memory in accordance with claim 18, further storing instructions for implementing message processor instruction means arranged to provide directions for operation of the message processor.

20. (Previously amended) A computer readable memory in accordance with claim 18, further storing instructions for implementing a virtual protocol processor arranged to organize communications to and from the computing device.

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21. (Original) A computer readable memory in accordance with claim 20, further storing instructions for implementing protocol processor instructions arranged to provide directions for operation of the protocol processor means.

22-23. (Canceled)